

REMARKS

Reconsideration of the above identified application in view of this Amendment is respectfully requested. This Amendment is in response to the Office Action dated October 19, 2007. In said Office Action, Disposition of Claims is stated as follows:

- > Claims 3 - 111 are pending in the application.
- > Claims 3 - 111 are rejected.

By said Office Action, the Examiner re-stated each of the 35 U.S.C. 103(a) claims rejections that were detailed in the First Office Action dated January 29, 2007. Thereafter, the Examiner provided reasons for rejecting Applicant's arguments for overcoming First Office Action Examiner's 35 U.S.C. 103(a) rejections of independent claims 3, 38, 56, and 86 with respect to Cabib et al. (US 5,539,517) in view of Tsuda (US 6,697,160). Therein, the Examiner stated that Applicant's arguments failed to specifically point out how the language of the claims patentably distinguishes them from the cited references, and thus did not comply with section 37 CFR Rule 1.111(b). Lastly, the Examiner provided reason for rejecting all of the dependent claims, based on them standing or falling with the independent claims 3, 38, 56, and 86.

By this Amendment, independent claims 3, 38, 56, and 86, were twice amended. Dependent claim 74 was incorporated into each of independent claims 3, 38, and 56, and thus cancelled. Dependent claim 100 was incorporated into independent claim 86, and thus cancelled. Claims 75 and 101 were currently amended, via renumbering dependency only. Claims 23 - 27, 29 - 37, 70, and 71, remain as Previously Presented. Claims 4 - 22, 28, 39 - 55, 57 - 69, 72, 73, 76 - 85, 87 - 99, and 102 - 111, remain as previously presented.

The Examiner is respectfully made aware that the US Patent Application Publication, to Moshe, having Pub. No.: US 2005/0275847 A1, and Pub. Date: Dec. 15, 2005, of the present U.S. Pat. Appl. No. 10/508,960, was used for preparing the present Amendment. Accordingly, Applicant's references to page and paragraph numbers correspond to those of the just stated publication of the present patent application document.

Briefly, the present invention relates to real time high speed high resolution hyper-spectral imaging. The present invention is based on using piezoelectric technology with closed loop control and analysis algorithms, for enabling real time high speed high resolution nanometer accuracy movement of a movable mirror in an optical interferometer,

along with using a specially designed and constructed optical interferometer mount as part of the optical interferometer, for achieving high thermo-mechanical stability of mounted optical interferometer components during the real time hyper-spectral imaging. Implementation of the present invention results in high speed collecting of high resolution interferogram images used for synthesizing and analyzing high resolution highly reproducible three-dimensional hyper-spectral (cube) images.

**35 U.S.C. 103(a) rejections of (dependent) claims 74 and 100**

Applicant respectfully directs the Examiner's attention to the First Office Action dated January 29, 2007, bottom of page 26, to middle of page 27, and middle to bottom of page 30. Therein, while again reviewing the support and detailed reasoning of the Examiner's rejections of claims 74 and 100, the Applicant discovered that the Examiner made a critically important and decisive technical error. Moreover, the Applicant firmly believes that the Examiner's rejection of claims 74 and 100 is strongly traversable, whereby the subject matter of claims 74 and 100 is not obvious to one of ordinary skill in the art in view of the cited references.

In the First Office Action, from the bottom of page 26 to the middle of page 27, the Examiner rejected claims 74 and 100 under 35 U.S.C. 103(a) as being unpatentable over Cabib et al. (US 5,539,517) and Tesuda (US 6,697,160) as applied in previous 103(a) claims rejections, and further in view of Bleier et al. (US 5,949,543). Therein, on the top of page 27, for convenient reference, the Examiner inserted copies of Figs. 2 and 3 from Bleier et al.. The Examiner then stated that Cabib et al. fail to teach the recitations of claims 74 and 100, specifically regarding the components of said optical interferometer mount.

Then, from the middle to the bottom of page 30, the Examiner provided support, based on Figs. 2 and 3 and text of Bleier et al., and reasoning, for rejecting claims 74 and 100. Specifically, therein, the Examiner stated the following:

"Bleier et al. teach a monolithic Michelson spectrometer (Figs. 2, 3) comprising a fixed mount section (Fig. 3, 200), a movable mount section (Fig. 2, 154) a mounting location of said beam splitter on said fixed mount section (Figs. 2, 3; 130), a mounting location of said fixed mirror on said fixed mount section (Figs. 2, 3; 140), a mounting location of said movable mirror on said movable mount section (Figs. 2, 3; 152), and a mounting location of said piezoelectric motor inside of said fixed mount section (Figs. 2, 3; 154), and a mounting location of said distance change feedback sensor on said fixed mount section (column 5, lines 56 - 65)."

Applicant's traversal is based on the Examiner's incorrect association of Applicant's "mounting location of said piezoelectric motor inside of said fixed mount section" with Bleier et al. Figs. 2, 3; 154 (and relevant text), with respect to claim 74, recitation of component (6), and with respect to claim 100, recitation of component (vi).

First and foremost, the Examiner incorrectly associated the Applicant's "said fixed mount section" with the Bleier et al. "movable base assembly 154" (clearly referenced and shown in Fig. 2, but not in Fig. 3, and clearly described in the text of Bleier et al.). Previously, the Examiner correctly associated the Applicant's "said fixed mount section" with the Bleier et al. (fixed) "monolithic optical assembly 200" (Fig. 3, also shown, but not referenced, in Fig. 2), along with mounting locations of the Bleier et al. "beamsplitter 130" and the Bleier et al. "fixed reflecting assembly 140" (each clearly referenced and shown in each of Figs. 2 and 3, and clearly described in the text of Bleier et al.).

According to Applicant's claim 74, recitation of component (6), and claim 100, recitation of component (vi), the optical interferometer includes "a mounting location of said piezoelectric motor inside of said fixed mount section". Clear, explicit, literal (textual), and figurative (illustrative), support for these particular Applicant's claims recitations are readily found throughout the Applicant's patent application.

Specifically, therein, in the SUMMARY OF THE INVENTION section, in paragraphs [0022] and [0023]. Additionally, specifically, therein, in the DESCRIPTION OF THE PREFERRED EMBODIMENTS section, in paragraph [0095], along with reference to Figs. 1A and 1B, and, Figs. 2A and 2B, respectively, and in paragraph [0096], along with reference to Figs. 1C and 1D, and, Figs. 2C and 2D, respectively. Therein, it is clearly illustratively described that "optical interferometer mount 32" (i.e., 32A [Figs. 1A and 2A], 32B [Figs. 1B and 2B], 32C [Figs. 1C and 2C], and 32D [Figs. 1D and 2D]) "features the following primary components: . . . , (6) a mounting location 82 of piezoelectric motor 26 inside of fixed mount section 72, . . . ".

The 'apparent' functional equivalent of the Applicant's "piezoelectric motor 26" (operative for displacing or moving movable mirror 24) in the Bleier et al. disclosure, column 3, line 53, with reference to Fig. 2, is the "adjusting knob 156" (operative for adjusting, displacing, or moving movable base assembly 154, and therefore, for displacing or moving retroreflector 152). However, therein, the "adjusting knob 156" is clearly, explicitly, literally, and figuratively, described as being part of (mounted to) the "movable base assembly 154" (Fig. 2), and **NOT** as being part of (mounted to) the (fixed) "monolithic optical assembly 200" (Figs. 3, 2), and **CERTAINLY NOT** inside of the (fixed) "monolithic optical assembly 200" (Figs. 3, 2). Moreover, the Applicant firmly contends that there is no obvious way or manner for the Bleier et al. adjusting knob 156 to

have a mounting location being part of (mounted to) the (fixed) monolithic optical assembly 200, and **CERTAINLY NOT** inside of the (fixed) monolithic optical assembly 200, for being operative to adjust, displace, or move movable base assembly 154, and therefore, for displacing or moving retroreflector 152.

Secondly, the Applicant firmly contends that the Bleier et al. disclosure provides no explicit or implicit, literal or figurative, teaching, suggestion, or motivation, particularly as relating to reducing temperature (thermal) or/and mechanical stability effects, for it to have been obvious to one of ordinary skill in the art at the time the (present) invention was made to change, re-design, or re-configure the mounting location of the adjusting knob 156 from the movable base assembly 154 to inside of the (fixed) monolithic optical assembly 200, in order to arrive at Applicant's "mounting location of said piezoelectric motor inside of said fixed mount section", with respect to claim 74, recitation of component (6), and with respect to claim 100, recitation of component (vi).

The Applicant additionally, respectfully points out to the Examiner that the Applicant's "mounting location of said piezoelectric motor inside of said fixed mount section", with respect to claim 74, recitation of component (6), and with respect to claim 100, recitation of component (vi), corresponds to a main aspect and advantage of the specially designed and constructed (thermo-mechanically stable) optical interferometer mount as part of the optical interferometer of the present invention, which clearly is not anticipated or obvious from prior art teachings, singly, or in combination with the Bleier et al. disclosure.

Thus, in view of the preceding discussion, and by simply comparing the (element) component mounting locations of the optical interferometer mount of the Applicant's optical interferometer, to the corresponding (element) component mounting locations of the optical interferometer mount of the Bleier et al. optical interferometer, one clearly arrives at the conclusion that it would **NOT** have been obvious to one of ordinary skill in the art at the time the (present) invention was made to modify the Cabib et al spectrometer, in view of, or in combination with, the relevant elements (components) of the Tsuda Michelson interferometer, by mounting the elements (components), especially the piezoelectric motor, in the optical assembly of Bleier et al., in order to arrive at the specially designed and constructed (thermo-mechanically stable) optical interferometer mount as part of the optical interferometer of the present invention, as recited in claims 74 and 100.

In view of the above, even though the Applicant's "mounting location of said piezoelectric motor inside of said fixed mount section", with respect to claim 74, recitation

of component (6), and with respect to claim 100, recitation of component (vi), corresponds to non-anticipated and non-obvious subject matter relating to only part of the optical interferometer mount of the optical interferometer of the present invention, the Applicant, for the purpose of expediting prosecution of the present application, has amended each of the independent claims 3, 38, 56, and 86, by incorporating therein the 'entirety' of the (further limiting) subject matter of dependent claim 74 or 100, thereby placing (amended) independent claims 3, 38, 56, and 86, in allowable condition.

Specifically, independent (method) claim 3 was amended by incorporating therein the 'entirety' of the (further limiting) subject matter of dependent claim 74. More specifically, in independent (method) claim 3, in step (b), regarding "said optical interferometer", recitation of the component "(vii) an optical interferometer mount" was amended by adding thereto the 'entirety' of the (further limiting) subject matter of dependent claim 74.

Specifically, independent (method) claim 38 was 'identically' amended by incorporating therein the 'entirety' of the (further limiting) subject matter of dependent claim 74. More specifically, in independent (method) claim 38, in step (a), regarding "the optical interferometer", recitation of the component "(vii) an optical interferometer mount" was amended by adding thereto the 'entirety' of the (further limiting) subject matter of dependent claim 74.

Specifically, independent (system) claim 56 was 'identically' amended by incorporating therein the 'entirety' of the (further limiting) subject matter of dependent claim 74. More specifically, in independent (system) claim 56, regarding "(b) an optical interferometer", recitation of the component "(vii) an optical interferometer mount" was amended by adding thereto the 'entirety' of the (further limiting) subject matter of dependent claim 74.

Specifically, independent (device - optical interferometer) claim 86 was 'identically' amended by incorporating therein the 'entirety' of the (further limiting) subject matter of dependent claim 100. More specifically, in independent (device - optical interferometer) claim 86, recitation of "(g) an optical interferometer mount" was amended by adding thereto the 'entirety' of the (further limiting) subject matter of dependent claim 100.

Accordingly, dependent claims 74 and 100 were cancelled.

Thus, the above discussion and amendments of independent claims 3, 38, 56, and 86, along with cancellation of dependent claims 74 and 100, completely overcome the Examiner's rejections to claims 74 and 100 based on grounds of 35 U.S.C. 103(a).

Therefore, the Applicant believes that (twice amended) independent claims 3, 38, 56, and 86, are in allowable condition, and such action is respectfully requested.

As a consequence of cancelling claims 74 and 100, claims 75 and 101 were currently amended, via renumbering dependency only. Specifically, claim 75 originally depending from claim 74 was amended to be dependent from (twice amended) independent claim 56. Specifically, claim 101 originally depending from claim 100 was amended to be dependent from (twice amended) independent claim 86.

In view of the preceding, the Applicant submits that since (twice amended) base (independent) claims 3, 38, 56, and 86, are in allowable condition, therefore, (currently amended) claims 75 and 101; (previously amended) claims 23 - 27, 29 - 37, 70, and 71; and (previously presented) claims 4 - 22, 28, 39 - 55, 57 - 69, 72, 73, 75 - 85, 87 - 99, and 102 - 111, depending from (twice amended) base (independent) claims 3, 38, 56, and 86, are in allowable condition, and such action is respectfully requested.

Thus, in view of the above, the Applicant submits that (twice amended) base (independent) claims 3, 38, 56, and 86; (currently amended) claims 75 and 101; (previously amended) claims 23 - 27, 29 - 37, 70, and 71; and (previously presented) claims 4 - 22, 28, 39 - 55, 57 - 69, 72, 73, 75 - 85, 87 - 99, and 102 - 111, are all in allowable condition, and such action is respectfully requested. The Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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